

REMARKS

Following entry of the above amendment, claims 20-37 are pending. Applicants have canceled claims 1-19. Claims 36 and 37 are withdrawn as being drawn to non-elected subject matter. Applicants amend claims 20, 21, 24, 25, and 33 to focus on particular embodiments of the invention, to add clarity, and to correct obvious errors. Support for the amendment is found in the specification as originally filed. See, for example, page 4 lines 20-24, and the claims as originally filed.

The Office Action states that claims 24 and 25 are rejected under 35 USC §112, first paragraph, for failing to comply with the written description requirement and further stating that the claim(s) contain new matter. Applicants respectfully traverse the rejection and refer the examiner to the claims as originally filed. However, in order to further prosecution, Applicants amend claims 24 and 25. In light of the amendment, Applicants respectfully request reconsideration and withdrawal of the rejection.

The Office Action states that claims 20-33 are rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Office Action states that claim 20 is indefinite in that it is not clear whether or not the actual process is carried out at the claimed temperature, pH and time period or if it is the polypeptide which has glucoamylase activity at the claimed temperature, pH and time period. Applicants respectfully traverse the rejection. However, in order to further prosecution, Applicants amend claim 20.

The Office Action states that claim 21 is indefinite in that it claims a pH at “between above 5.5 and 6.2.” Applicants amend claim 21 to provide clarity.

The Office Action states that claim 33 is indefinite since it contains the abbreviation “DS” and further states that it is not clear what “DS” stands for. Applicants respectfully traverse the rejection as the term “DS” is well known in the art. However, in order to further prosecution and to add clarity, Applicants amend claim 33.

In light of the amendment, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 USC §112, second paragraph.

The Office Action states that claims 2-24, and 26-35 are rejected under 35 USC §102(e) as being anticipated by Bisgaard-Frantzen et al. (US2004/0023349 A1). Applicants respectfully traverse the rejection. Applicants respectfully note that claims 2-19 have been cancelled and were not considered on the merits according to the Examiner. See, for example, the Office Action mailed February 27, 2009, Page 2. Therefore, Applicants response is to the Examiner's rejection with respect to claims 20-24 and 26-35. The Office Action states that Bisgaard-

Frantzen teach a process of enzymatic saccharification wherein an alpha-amylase liquefied starch product is treated with a polypeptide having glucoamylase activity at temperatures between 50-80 for 0.5-36 hours at a pH from 5.5-6.2 and the polypeptide is added in an amount of 0.01-0.5 AGU/gDS. Applicants respectfully note that the Examiner has mischaracterized the teachings of Bisgaard-Frantzen. For example, Bisgaard-Frantzen teaches a "full saccharification process" lasting about 72 hours carried out at a temperature from about 30-65 degrees Celsius. See, for example, paragraph [0017]. Bisgaard-Frantzen also suggests the use of glucoamylase in an amount of 0.02-20 AGU/gDS, preferably 0.1-10 AGU/gDS, such as 2 AGU/g DS. See, for example, paragraph [0040]. Further, Bisgaard-Frantzen teaches the enzymatic treatment processes lasting about 2-60 hours, at a temperature from about 40-60 degrees Celsius, at a pH from about 4 to 7, more preferably 4 to 5. See, for example, paragraph [0056]. Lastly, Examples 2 and 3 of the Bisgaard-Frantzen reference are carried out at about pH5 at 32 degrees Celsius for 64 hours with the addition of 2 AGU/g DS glucoamylase.

As stated in MPEP §2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference" citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). With respect to ranges, MPEP §2131.03(II) states that a prior art reference that teaches a range overlapping or touching the claimed range anticipates if the prior art range discloses the claimed range with "sufficient specificity." Also, when the prior art discloses a range which touches or overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation and what constitutes a "sufficient specificity" is fact dependent. Applicants invention as claimed comprises a process wherein the process is carried out at a pH 5.5 to 6.2 at a temperature of 50-80°C for 0.5 to 36 hours. Bisgaard-Frantzen does not disclose any examples wherein the pH, temperature, or time of the process falls within the ranges of the Applicants invention as claimed. Further, the preferred embodiments of Bisgaard-Frantzen contain ranges of pH, temperature, and time that are also outside of the ranges of pH, temperature and time of the Applicants invention as claimed. Since Bisgaard-Frantzen et al. do not teach each and every element of the Applicants' invention as set forth in the claims, and any overlap of the teachings of Bisgaard-Frantzen fail to teach the Applicants' claimed ranges with "sufficient specificity," Bisgaard-Frantzen et al. do not anticipate Applicants' invention as claimed. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection.

The Office Action states that claims 20-35 are rejected under 35 USC §103(a) as being obvious over the combination of each of Veit et al. (US2004/0091983 A1) or Veit et al. (WO

02/38787 A2) or Olsen et al. (WO 02/074895 A2) or Olsen et al (US2004/0115779 A1) or Veit (US 20020006647 A1) in view of Nielsen et al. (US 6,255,084). Applicants respectfully traverse the rejection.

Applicants respectfully note that Viet et al. (US2004/0091983) and Olsen et al. (US2004/0115779) qualify as prior art only under 102(e) and are subject to an obligation of assignment to the same assignee as the instant application. Therefore, Viet et al. (US2004/0091983) and Olsen et al. (US2004/0115779) do not qualify as prior art under 35 USC §103(a) because they are excluded under 35 USC §103(c). Consequently, Applicants respond to the Examiner's rejection under 35 USC §103(a) only with respect to Veit et al. (WO 02/38787 A2) or Olsen et al. (WO 02/074895 A2) or Veit (US 20020006647 A1) in view of Nielsen et al. (US 6,255,084).

The Office Action states that "the references teach method[s] of enzymatic saccharification or pre-saccharification wherein the starch containing material is treated with a polypeptide at a temperature of 50-80°C for 0.5-36 hours. The polypeptide may be an alpha-amylase or glucoamylase from a fungal organism. They also teach the saccharification step to be followed by yeast fermentation." Applicants respectfully note that the Examiner has mischaracterized Veit et al. (WO 02/38787 A2), Olsen et al. (WO 02/074895 A2) and Veit (US 20020006647 A1). Each of the references teaches saccharification in the presence of a glucoamylase. However, the references do not teach the temperature ranges of 50-80°C and they do not teach the timeframe of 0.5-36 hours.

The Examiner concedes that none of Veit et al, Olsen, or Viet teaches saccharification or pre-saccharification at a pH from 5.5-6.2. However, the Examiner attempts to cure the deficiency by stating that Nielsen et al. (US 6255084) teach thermostable glucoamylases at a pH of 5.5 and that at the time the invention was made that it would have been obvious to one of ordinary skill in the art to use the glucoamylase in Nielsen in a saccharification method such as those taught by Viet and Olsen with a reasonable expectation of success. Applicants respectfully disagree.

MPEP §2142 provides that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. To do so, the Examiner is required to resolve the *Graham* factual inquiries and consider each reference as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Following the factual inquiries, the Examiner must then provide a rationale or reason as to why one skilled in the art would combine and/or modify the references to arrive at the Applicants invention.

Applicants refer the Examiner to column 7 lines 7 to 15 of Nielsen et al. and respectfully note that Nielsen et al. teach that the pH of the solution for saccharification is generally between 3 and 5.5, but preferably is 4 to 4.5. Nielsen et al. effectively teach away from the Applicants invention of pre-saccharification or saccharification at a higher pH of 5.5-6.2. If anything, one of ordinary skill in the art would be discouraged from rather than motivated to increase the pH of the saccharification slurry. Thus, the teachings of Nielsen et al. actually support the non-obviousness of Applicants invention.

In light of the arguments above, Applicants respectfully request reconsideration and withdrawal of the rejection.

The Office Action states that claims 20, 22, 23, and 30-33 are rejected on the ground of non-statutory obviousness-type double patenting (ODP) as being unpatentable over claims 19-24 of US Patent No. 6255084 "because the scope of both sets of claims are the same i.e. drawn to a saccharification process comprising the use of a glucoamylase at temperatures ranging from 60-80 at a pH of 5.5 for 24-26 hours." Applicants respectfully traverse the rejection. Applicants respectfully note that the Examiner has mischaracterized the claims of US 6255084 and the instant claims. Furthermore, as stated above, the instant claims are not obvious over US 6255084 even in light of Veit et al. (WO 02/38787 A2), Olsen et al. (WO 02/074895 A2) or Veit (US 20020006647 A1) for purposes of the rejection under 35 USC §103(a). Thus, they are also not obvious for purposes of the ODP rejection. In light of the remarks above, Applicants respectfully request reconsideration and withdrawal of the rejection.

The Office Action states that claims 20-23, 27 and 29 are provisionally rejected on the ground of non-statutory ODP as being unpatentable over claims 33, 38, and 52 of co-pending Application No. 11/814,304. Applicants respectfully traverse the rejection. The public policy that the doctrine of double patenting seeks to prevent is the unjustified extension of patent exclusivity beyond the term of a patent. Applicants respectfully note that the natural expiry of the instant application is before the natural expiry of the application in which the Examiner has cited in the ODP rejection. Thus, the granting of the instant application without a terminal disclaimer will not violate the public policy in which the double patenting doctrine is based. In light of the remarks above, Applicants respectfully request reconsideration and withdrawal of the ODP rejection.

Applicants believe the present claims are in condition for allowance and such action is respectfully requested. Applicants believe that no other fees are due in connection with the filing of this paper other than those specifically authorized herewith.

Should any other fees be deemed necessary to effect the timely filing of this paper, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 50-1701.

If the Examiner has any outstanding issues with the pending claims, the Examiner is encouraged to telephone the undersigned for expeditious handling.

Respectfully submitted,

Date: June 29, 2009

/Jennifer Fox, Reg. # 52218/
Jennifer L. Fox, Reg. No. 52,218
Novozymes North America, Inc.
500 Fifth Avenue, Suite 1600
New York, NY 10110
(919) 494-3197